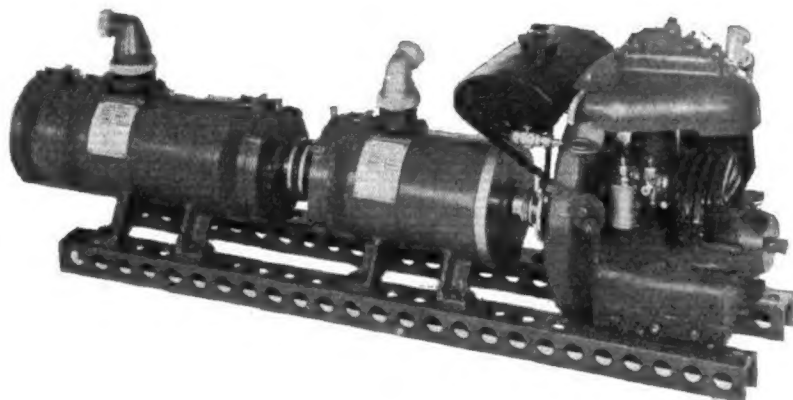
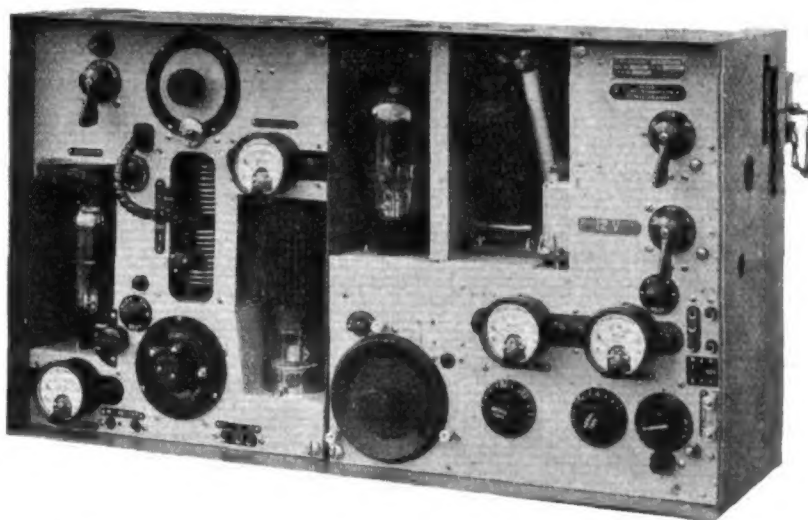
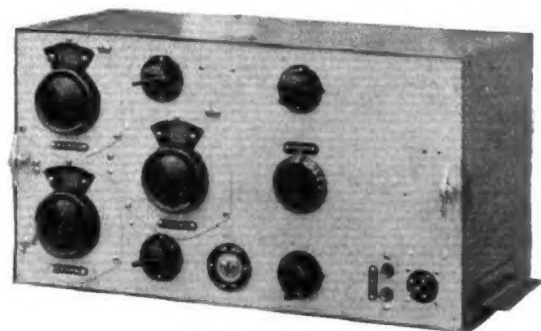


FOR the EMPIRE BOATS



Some features of the special equipment developed at Marconi's Hackbridge works, for the Empire flying boats. Above are (left and right) the receiver and transmitter for medium and short waves; the latter are to be used for tropical communications and direction-finding. On the left is the auxiliary power unit for use while the machine is on the water, comprising a two-stroke engine, a generator (also used as a starting motor) and a double-output (L.T. and H.T.) generator.

weather. On certain days it is not unusual for machines to fly about for upwards of half an hour while other pilots are endeavouring to locate the airport with the help of rockets and other unsuitably maritime devices, and while still later arrivals are forced by shortage of fuel to make for other aerodromes.

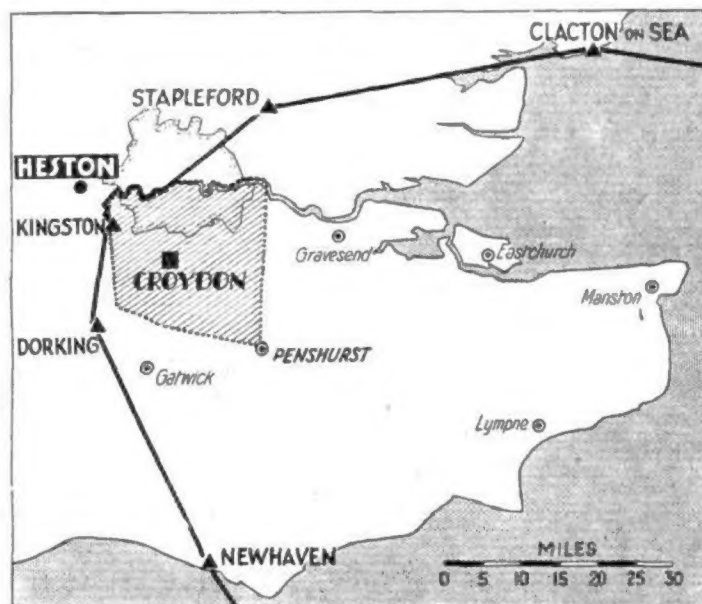
As its name implies, a controlled area is one into which no machine may enter without first obtaining permission from the central control. This permission may be obtained by radio, or, in the case of unequipped machines, by telephone after landing at some aerodrome outside the area when the weather is not quite impossible. By this means the officer at the terminal airport is able to retain complete control over the movements of all machines within a certain radius of this airport. Outside this area he can still request pilots to change altitude if there is any possible danger of collision, but it is with the controlled area that he is specially interested when visibility is reduced to the international Q.B.I. standards of 1,000 yards horizontally and 1,000 feet vertically.

Remote Transmitters

At Croydon there are, in fact, three separate Marconi radio sets, one of which is reserved exclusively for dealing with each machine as it is given permission to approach the airport, and is used only in Q.B.I. conditions. This set has its own D/F aerial for the final guidance of pilots, though all three sets have their transmitters at Mitcham, where adequate masts can be used without danger to approaching machines. Needless to say, the necessary meteorological and other communications are carried out on different wavelengths.

The officer on duty has before him a very large map into which pins with identification flags are placed to indicate the approximate position of each machine in regular operation within the control area. As information is received, or at regular intervals by dead reckoning, these pins are moved accordingly. A second large map is used

to plot bearings and "fixes" with the help of lengths of thread which emerge from the positions occupied by the Pulham, Lympne and Croydon D/F stations. The two outlying stations, on request, obtain a bearing on a transmitting machine, and their results are re-transmitted to Croydon, where the machine's position is plotted. The whole business does not usually take more than a couple of minutes. In the ordinary way the pilot only requires direct bearings from Croydon, and in thick weather these



The area which is looked after by the Croydon control officers. The shaded area surrounding the airport is the "controlled zone," which no machine may enter during conditions of poor visibility unless the pilot previously obtains permission from Croydon.